THE JOURNAL OF

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

(Including Transactions)

Volume 36 JUNE 1914 Number 6

CONTENTS

SOCIETY AFFAIRS

Spring Meeting: Program (III); Abstracts of Papers to be presented (IV); Transportation Arrangements (VI). Current Affairs (VIII). Engineering Congress 1915 (VIII). Council Notes (IX). Applications for Membership (IX).

PAGE

TRANSACTIONS SECTION

Symposium on Welding at Boston

The Welding of Metals with Liquid Fuel, W. N. Best ... 205

The Oxy-Acetylene Process of Welding, Henry Cave ... 208

The Thermit Process of Welding, W. R. Hulbert ... 214

Electric Welding, W. A. Hodges ... 217

Meetings of the Society in Chicago

Tests of Four-Pass Boilers with Illinois Coal, Bryant Bannister ... 220

Discussion: G. A. Goodenough, Joseph Harrington, H. Boyd Brydon, R. H. Kuss, T. A. Marsh, A. Bement, F. G. Gasche, J. C. Bannister, The Author ... 222

PAGE

Large Steam Power Plants. Topical Discussion by I. E. Moultrop, J. W. Parker, John Hunter, W. L. Abbott ... 230

Necrology ... 234

Meetings ... 235

REVIEW SECTION

Foreign Review and Review of the Proceedings of Engineering Societies ... 0117

SOCIETY AND LIBRARY AFFAIRS

Personals ... LI

Student Branches ... LI

Employment Bulletin ... LII

Accessions to the Library ... LIV

Abridged List of Officers and Committee Chairmen ... LVI

PUBLISHED MONTHLY BY

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

29 West Thirty-ninth Street, New York

PRICE 35 CENTS A COPY, $3.00 A YEAR; TO MEMBERS AND AFFILIATES, 25 CENTS A COPY, $2.00 A YEAR. POSTAGE TO CANADA, 50 CENTS ADDITIONAL; TO FOREIGN COUNTRIES, $1.00 ADDITIONAL

C 55. The Society as a body is not responsible for the statements of facts or opinions advanced in papers or discussions.

Entered as second-class matter, January 4, 1912, at the Postoffice, New York, N. Y., under the act of March 3, 1879

COMING MEETINGS OF THE SOCIETY

June 3, *St. Louis, Mo.*, Engineers Club. Paper: Oil Engines with Special Reference to Fulton-Tosi Oil Engines, by H. R. Setz. Illustrated by lantern slides.

Spring Meeting, June 16–19, *St. Paul-Minneapolis.* See p. III.

THE JOURNAL OF

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

(Including Transactions)

Volume 36 June 1914 Number 6

THE SPRING MEETING: There is no more interesting or remarkable section of the country for a meeting of engineers than St. Paul and Minneapolis where the Spring Meeting will be held June 16-19. Several of the professional papers will deal with great engineering developments of the Northwest, with moving pictures showing ore handling on the Great Lakes. Chief among the social events will be a visit to the home of Mr. Gebhard Bohn, a beautiful estate on Lake Minnetonka. There will be an opportunity to visit the milling district of Minneapolis, with its daily output of 84,000 bbl. of flour, and the water power developments of the Mississippi. Arrangements have been completed for an excursion to Duluth with its harbor having a tonnage second only to New York in the United States, chiefly of ore, grain and coal. Members will go from Chicago to St. Paul in a splendidly equipped special train making stops en route.

PROGRAM FOR THE SPRING MEETING

Tuesday, June 16, St. Paul

2.00 p.m. Opening of headquarters and registration.
5.00 p.m. Council meeting.
8.30 p.m. Reception.
9.30 p.m. Introductory remarks by the chairman of the local committee, Max Toltz. Welcome to Minnesota by Governor A. O. Eberhardt. A response by James Hartness, President of The American Society of Mechanical Engineers, followed by a message to the engineering fraternity, especially the mechanical engineering profession, by James J. Hill, former president of the Great Northern System.
10.00 p.m. Dancing and refreshments.

Wednesday, June 17, St. Paul

10.00 a.m. Business meeting. Proposed amendments to the Constitution and announcement of ballot on amendments to C-9 and C-11. Discussion of report of Committee on Flanges. Report of Committee on Boiler Specifications.

PROFESSIONAL SESSION

PULVERIZED COAL BURNING IN THE CEMENT INDUSTRY, R. C. Carpenter
PULVERIZED COAL FOR STEAM MAKING, F. R. Low
TOPICAL DISCUSSION ON POWDERED FUEL

During the morning the ladies will be shown about the city and will be entertained at luncheon.

1.00 p.m. Adjournment for luncheon. (Conference luncheon for members of Council with representation of the local committees and sections)

Wednesday Afternoon

MISCELLANEOUS SESSION, 2.30 P.M.

INDUSTRIAL SERVICE WORK IN ENGINEERING SCHOOLS, J. W. Roe
CLASSIFICATION AND HEATING VALUE OF AMERICAN COAL, Wm. Kent
THE RAILROAD TRACK SCALE, W. W. Boyd
GEAR TESTING MACHINE, Wilfred Lewis
A FLOW METERING APPLIANCE, A. M. Levin

Wednesday Evening

8.15 p.m. Lecture on IRON ORE HANDLING, with moving pictures, by John Hearding, superintendent, Oliver Iron Mining Company, Duluth.

Thursday, June 18, Minneapolis

9.15 a.m. Leave for Minneapolis by trolley.

PROFESSIONAL SESSION, 10.00 A.M.

Meeting in the main engineering building, University of Minnesota, Minneapolis. Opening address by a member of the engineering faculty.

POWER DEVELOPMENT AT THE HIGH DAM BETWEEN MINNEAPOLIS AND ST. PAUL, Adolph F. Meyer
THE HANDLING OF COAL AT THE HEAD OF THE GREAT LAKES, G. H. Hutchinson
MINNEAPOLIS FLOUR MILLING, Charles A. Lang

During the morning the ladies will be shown about Minneapolis in automobiles.

Thursday Afternoon

1.00 p.m. Luncheon at the University.

2.30 p.m. Members and guests leave by train for Lake Minnetonka to visit the estate of Mr. Gebhard Bohn. Supper will be served, followed by dancing.

10.00 p.m. Party will leave by train, due in Minneapolis at 10.30 and in St. Paul at 10.45

Friday, June 19, St. Paul-Minneapolis

Technical excursions in St. Paul and Minneapolis (see loca program).
2.00 p.m. Council meeting.
2.30 p.m. Trip to Duluth. On arrival at 6.30 p.m., the party will be received by local members and given an opportunity on Saturday to see the Duluth harbor.

PROFESSIONAL PAPERS

There are to be three professional sessions at the St. Paul-Minneapolis Meeting as listed in the program published in this number. Advance copies of the papers assigned to these sessions have been printed for distribution and for use at the meeting. Those desiring copies in advance of the meeting are requested to notify the Secretary. After the meeting the papers and the discussion upon them will be published in The Journal. Brief abstracts of the papers follow herewith:

PULVERIZED COAL BURNING IN THE CEMENT INDUSTRY

By R. C. Carpenter

The paper treats of the development of the process of burning pulverized coal in the Portland cement industry and points out the underlying principles which control the process. It also gives a brief description of the machinery needed for the operation.

The requirement of the successful burning of pulverized coal is ability to burn the coal particles while in suspension. The process has always proved inefficient or a failure when the coal particles could not be kept in suspension during the entire process of combustion. This fundamental requirement makes it obvious that to obtain the very best results the coal should be ground very fully and also that the combustion furnace should be of favorable form. The cement rotary kiln is favorable for burning in suspension while the modern boiler furnace is not.

The paper describes the rotary kiln, dryers for removing moisture, various forms of pulverizing machines used in the industry and, as an example, a complete outfit for preparing the pulverized coal as adapted for a Portland cement mill. It also gives data as to the cost of pulverizing the coal and the production from the kilns.

PULVERIZED COAL FOR STEAM MAKING

By F. R. Low

Many attempts have been made to use pulverized coal as a fuel under boilers. Most of these have looked promising, but few have persisted, and a small proportion of the coal used for steam making is burned in this way. The paper mentions some of the earlier attempts and describes some of the systems upon which present effort is being expended. The proportionately large surface exposed by the finely comminuted fuel for oxidation makes perfect smokeless combustion with a minimum air supply possible. Combustion under such conditions, however, results in an unsupportable furnace temperature. If this is reduced by increasing the excess air, efficiency is sacrificed; if by reducing the amount of fuel fed, capacity is limited.

The overall advantage of this over the less expensive stoking methods in common use is yet to be proven.

INDUSTRIAL SERVICE WORK IN ENGINEERING SCHOOLS

By Joseph W. Roe

A live work has sprung up in the American engineering schools in the past six years, the object of which is to bring students into friendly contact with workmen while still in college, and to develop a feeling of confidence and goodwill on the part of both. About 3000 students in more than 100 engineering schools are engaged in it and are reaching about 50,000 men. The contact is mainly through teaching, principally in teaching English to foreigners as that is the most present need; but there are classes in other subjects, such as first aid to the injured, drawing, shop mathematics, civics, etc., as opportunity offers.

The work has proven of advantage to the workman, the student, the employer and the community. Typical instances are given of its working. It is not to be confused with regular settlement work, as one of its main objectives is the development of the student himself who is doing the teaching. Refined tools of production make possible high social development, but they by no means insure it unless they are directed in a spirit of fairness, goodwill and social responsibility. The development of this spirit is the object of the movement. It is suggested as an activity for the student branches of the Society.

CLASSIFICATION AND HEATING VALUE OF AMERICAN COALS

By William Kent

The paper gives the proximate and ultimate analyses and the heating values of 155 coals from different States, selected from the analyses of over 3000 coals published in Bulletin 22 of the U. S. Bureau of Mines. The selection was made in such a manner as to cover practically the extreme range of composition of the coals from the several States. A study of the relation of the heating value to both the ultimate and proximate analysis was made, and it was found that all the coals of the Appalachian field, cannel coals excepted, show figures of heating value per pound of combustible close to those derived from a curve showing the relation of the heating value to the volatile matter in the combustible, first published by the author in 1892, when the volatile matter is not more than 35 per cent of the combustible. For coals higher in volatile matter, and for Western coals generally, the heating value varies over a wide range and appears to have no relation to the volatile matter, each district having a law of its own. It is found, however, that with such coals the heating value is related to the amount of moisture left in the coal after air drying, and that the proximate analysis calculated to coal air-dry and free from ash forms a basis for estimating the heating value of a coal with as near an approximation to accuracy as is given by Dulong's formula applied to the ultimate analysis.

The author proposes a new classification of coals, based upon proximate analysis and upon heating value, giving seven classes, as follows:

I Anthracite	IV Bituminous, high grade
II Semi-anthracite	V Bituminous, medium grade
III Semi-bituminous	VI Bituminous, low grade

VII Sub-bituminous and lignite

Classes I, II and III are the same as in earlier classifications, the semi-bituminous coals containing between 15 and 30 per cent of volatile matter in the combustible. Classes IV, V and VI have heretofore been considered as a single class, but they vary greatly in heating value and in the amount of moisture remaining in air-dried coal, which is

used as the basis of the subdivision into three classes. Class VII includes the two classes sub-bituminous and lignite of the U. S. Geological Survey, which are differentiated one from another by color, texture and disintegration by weathering, but not by heating value or by analysis.

THE RAILROAD TRACK SCALE

By W. W. Boyd

The present use of cast iron or steel levers requires too much metal to obtain the necessary strength which is required in this rough service; structural shapes are suggested, because of elimination of costly patterns, lightness, ease of fabrication, etc.

All knife edge seats should be machined to insure accuracy, also knife edges are to be ground to true, straight edges.

Weigh bridges are to be made sectional, to avoid objectionable bending over the supports, such as occurs in the use of continuous beams. In order to protect the knife edges, the load should be applied as near the middle of the end span as is possible.

To insure accuracy under all conditions of loading the levers must be made stiff enough to resist undue deflection. Deflection in the levers destroys the accuracy of the scale; the less spring, the more accurate and sensitive a scale will be. Further, the fewer levers used, the more sensitive and accurate the scale.

Following out the idea of stiffness in the levers, the maximum load that may come upon the weigh bridge must be considered, not as a load uniformly distributed, but as it actually exists, a concentrated load applied to the rail through the wheels and acting at the point of contact.

Some form of relieving mechanism should be used to lift the weigh bridge free from the knife edges and allow locomotives, etc., to pass over the weigh bridge with freedom, in preference to a dead rail.

Scales should be tested each month, and oftener, to insure continued accuracy. It is remarkable how little attention is given to this very important matter.

GEAR TESTING MACHINE

By Wilfred Lewis

A brief description of a gear testing machine which is the result of the author's efforts to realize in a concrete form an ideal machine for the purpose of continuing the experiments upon the strength of gear teeth reported to the Society by Professor Guido H. Marx at the Annual Meeting in 1912. The machine is the same in principle as that developed by the author and used by the Committee on Standards for Involute Gears, in tests upon gear wheels. It is designed to put a working load upon the teeth without consuming an excessive amount of power. The constructive features are new, however. The driving gear or the pinion mates with two gears rotating about the same axis. One of the driven gears is attached to the end of a hollow shaft and the other to the end of a solid shaft, passing through the hollow shaft and concentric with it. The load is applied by a pneumatic cylinder which produces a torsional movement between the two concentric shafts on which the two driven gears are placed. This causes one of the two gears to press against one side of the pinion teeth and the other to press against the other side. The pinion thus becomes in effect a driver and a driven gear. The power required to drive the apparatus with the gears loaded through the pressure of the pneumatic cylinder is only that required to overcome the friction of the teeth and of the journals.

A FLOW METERING APPARATUS

By A. M. Levin

The paper describes an apparatus for the measurement of fluids in closed channels. This consists of an ordinary elbow or bend, properly calibrated and provided at its outer and inner curved walls with suitable pressure-ports through which the pressures at these points may be transmitted to an ordinary U-tube manometer. Instead of determining the velocity of the fluid from its inertia pressure, as in the pitot tube and venturi meter, it is proposed in the flow-bend to utilize as a gage the centrifugal pressure exerted in deflecting the course of the fluid through a definite path. The centrifugal action of the moving mass depending on its true angular velocity only, eddies and whirls in the body of the fluid itself will but nominally affect the pressure registered at the pressure ports.

The various formulae relating to the flow-bend are the same as the corresponding ones relating to the pitot tube, but are prefixed by a multiplier which depends on the ratio of the diameter or width of the channel to the mean radius of curvature of the bend. The pressure difference between the two sets of pressure ports is, for equal velocity, ordinarily one and one-half times to twice the pressure difference shown by the pitot tube.

Many of the facts relating to the flow bend which its theory evidently brings out are amply corroborated by practical test.

POWER DEVELOPMENT AT THE HIGH DAM BETWEEN MINNEAPOLIS AND ST. PAUL

By Adolph F. Meyer

The project for the improvement of the Mississippi River between Minneapolis and St. Paul had its inception in 1866. No definite action was taken, however, until 1894, when plans were developed for two locks and dams about 13 ft. lift each, to facilitate navigation. There finally developed the construction of the present High Dam on the site of the proposed low dam No. 1, with a head of over 30 ft. by which means 15,000 to 20,000 h.p. would be generated in addition to the effect which the dam would have upon the river for navigation purposes. As a result of state legislation there has been incorporated the Municipal Electric Company composed of the State University of Minnesota, and the cities of Minneapolis and St. Paul which, in the event of favorable congressional action, will lease the available water power from this dam.

The paper takes up the preliminary features which were studied when the project was developed with regard to the extent of the water supply, the effect of pondage and the power available. It then discusses the economical size of installation under the conditions to be met and describes the installation which was finally proposed. Data are given

upon the cost of developing the water power, including fixed charges and operating cost.

The known uses for which the Municipal Electric Company will supply power give a definite indication of the present and future consumption of this power, a study of which completes the power problem involved in the High Dam development. The concluding portion of the paper takes up the various factors involved in the utilization of this power.

THE HANDLING OF COAL AT THE HEAD OF THE GREAT LAKES

By G. H. Hutchinson

The shipment of coal to the Northwest by way of the Great Lakes began as far back as 1855, when about 1414 tons passed through the Soo Canal. Little, if any, of this was taken to Duluth and Superior, as the bulk of it went to the copper country in Michigan. In 1871 E. N. Saunders, for many years president of the North Western Fuel Company, arranged for the first shipments of commercial coal to Duluth, amounting to 3000 tons the first year. In 1913 the total tonnage passing through the Soo Canal was nearly 80,000,000 tons, of which about 20 per cent was coal.

This paper traces the development of coal handling apparatus during this period, with special reference to the equipment at the Head of the Lakes. It is illustrated by many diagrams and photographs. It also discusses the transfer of coal at the lower lake ports from cars to boats. A historical treatment is given of the arrangement of the docks for receiving, stocking and re-shipping coal at the receiving ports, with a description of the improvements made from year to year in the machinery for handling coal. Data are given with regard to the first electric coal-handling plant installed for the North Western Fuel Company, with which is compared a late installation comprising the first electrically operated man trolley coal bridge, showing the tendency toward the use of large units within the past few years. Features relating to the practical operation of the apparatus are outlined, such as screening, trimming, weighing, avoidance of breakage and spontaneous combustion, safeguarding of employees, etc.

MINNEAPOLIS FLOUR MILLING

By Charles A. Lang

The paper describes the development of milling in Minneapolis with reference to the water power and the modern milling process. The first mill built there in 1823 was a crude affair and in the early days of the industry there was much rivalry. The later developments have been in the direction of the increase of capacity and the improvement of milling systems rather than of building new mills. The present output is 84,000 bbl. of flour a day. The power is furnished by the Falls of St. Anthony, practically all of the 60,000 h.p. of which is consumed by them.

One of the American contributions to milling developed in Minneapolis is the purifier, a reciprocating sieve over which passes certain of the streams of mill stock and through which is drawn a current of air which removes the dust that would cause discoloration in the finished flour. In the Hungarian or gradual reduction process the wheat passes through numerous grinding operations in series before its final reduction to flour and it is the means by which clean white flour is produced. The color of finished flour is obtained by granulation.

Wheat obtained from different sections is by no means the same in characteristics or quality, but the flour produced must be. The modern mill has a well-equipped laboratory for testing various kinds of wheat.

The paper concludes with a detailed description of the milling process.

TRANSPORTATION ARRANGEMENTS

SPECIAL TRAIN TO BE PROVIDED BETWEEN CHICAGO AND ST. PAUL

A special train on the Chicago, Burlington & Quincy Railroad, leaving Chicago Monday evening, June 15th, at 10:45 o'clock, will convey the members to St. Paul

Bluffs Near Lynxville, Wis., on Bank of Mississippi

where they will arrive Tuesday afternoon, at 3:30 o'clock.

The route traveled is the main line of the Burlington Railroad, from Chicago to the Twin Cities. From Savanna, Illinois, for the distance of 300 miles to St. Paul, the train skirts the east bank of the Mississippi, with its beautiful scenery dotted by picturesque villages, many of them founded by Italian, German and Yankee pioneers long before the advent of the railroad. The train schedule has been so arranged as to enable the members to pass through the more interesting section of the trip by daylight.

The special train provided will have a very high grade of equipment, combining safety and comfort with punctuality. There will be standard drawing room and compartment sleeping cars and a large steel dining car, lighted by concealed indirect lighting and having many new and unusual conveniences, will be attached. The train will also include a lounge-observation car of luxurious type, with smoking room and

buffet annex, large lounging parlor, writing alcove and library. At the rear of the car is a sun parlor having broad plate glass windows which may be removed in a short space of time, creating an open car. The train will be electric lighted from the head end by a 64-volt, 25-kw. Curtis turbo-generator, which will be in charge of an expert who will demonstrate its operation. A

Mississippi River and Three Sisters Mountain

dynamometer car in full operation will be attached to the train, showing how the various tests records on railroads are taken automatically.

Three stops en route have been planned. The first of these will be made at De Soto, Wis., on Tuesday morning, from 6.30 to 7.30, for the observation of the rebuilding and double tracking now being done on this line. Much of the work is being accomplished by a dredging process never before used, and one of these dredges in operation, working from the river to the railroad, will be seen at this point.

At Grand Crossing, Wis., another stop will be made from 8.55 to 9.40 a.m. Here a large non-articulated locomotive, said to hold the record for economical operation, will be on exhibition. This engine is equipped with an automatic stoker, firing slack coal, and has a record of hauling 85 cars, 5812 gross tons, over a division having a $^3/_{10}$ per cent grade.

At a quarter past eleven the train will make a stop for three hours at Pepin, Wis., to enable the party to enjoy the beauties of Lake Pepin, which is a natural broadening of the Mississippi River, 3 miles wide and 22 miles long. Among the events planned are motor boat rides on the lake and short automobile tours into the surrounding country. A large government pier located on the lake is also an interesting feature.

For the assistance of members who will attend the Spring Meeting from the East, the following schedule of trains which will insure connections with this special train at Chicago is offered:

N. Y. C. & H. R. R. R. CO.

Lv. New York..6.45 p.m. Arr. Chicago..5.00 p.m. Fare, $25
Lv. New York..2.00 p.m. Arr. Chicago..5.00 p.m. Fare, $20
Lv. New York..5.00 p.m. Arr. Chicago..2.00 p.m. Fare, $26

P. R. R. CO.

Lv. New York..2.06 p.m. Arr. Chicago..5.00 p.m. Fare, $20
Lv. New York..5.04 p.m. Arr. Chicago..2.00 p.m. Fare, $26
Lv. New York..6.04 p.m. Arr. Chicago..8.54 p.m. Fare, $20

For a party of ten or more a reduction of $1.85 on the fare quoted will be made. The cost of sleeping reservations on any of these trains is at the rate of $5 for the lower and $4 for the upper berths.

The railroad fare from Chicago to St. Paul is $8.05, while the cost of sleeping accommodations is as follows:

Lower Berth	$2.00	Section	$3.60
Upper Berth	1.60	Compartment	5.00
		Drawing Room	$7.00

Request for reservation on special train should be made to P. S. Eustis, Passenger Traffic Manager, C., B. & Q. R. R., 547 West Jackson Boulevard, Chicago. As space will be reserved in the order of receipt of request, it is desirable to make early arrangements.

River and Islands at De Soto, Wis., Where Stop Will Be Made En Route

The Pennsylvania Railroad lands its passengers in Chicago at the Union station, from which the special train on the C., B. & Q. R. R. starts. A through ticket from New York to St. Paul includes a coupon covering free transportation of passenger and hand baggage be-

tween any two stations in Chicago. Trunks are checked through to destination, also without charge for transference across the city.

HOTEL ACCOMMODATIONS

The St. Paul Hotel, St. Paul, Minn., will be the headquarters for the Spring Meeting and all sessions in St. Paul will be held there. Requests for reservations should be made direct to the hotel management.

Accommodations can also be secured in St. Paul at the Hotel Ryan.

In Minneapolis the hotels suggested are the Plaza on Hennepin Avenue, the Leamington on 9th Street and Third Avenue, South, and the Dyckman, on 6th Street, near Hennepin Avenue.

The rates per day for room and bath are as follows:

HOTEL	SINGLE OCCUPANCY	DOUBLE OCCUPANCY
St. Paul	$2—$5	$3—$6
Hotel Ryan	$2—$3	$3—$5
Leamington	$2	$3
Dyckman	$2 upwards	$3 upwards
Plaza	$2—$3 $5 (Suite of two rooms) $8 (Suite of three rooms)	

CURRENT AFFAIRS

During the past month the President and Secretary of the Society have attended a number of meetings of engineers in local centers, some under the auspices of the local Committees on Meetings of the Society and others in which they coöperated with other members of the engineering profession. Accounts of those conducted by the members of the Society are given in another section of The Journal.

Both Mr. Hartness and Mr. Rice were guests of honor at the dinner of the Providence Mechanical Engineering Association and of the Society held in Providence on April 29. On April 30 they returned to New York, especially to bid a bon voyage to Ambrose Swasey, Past-President of the Society, who sailed for Germany on the Victoria-Luise, which a little less than a year ago conveyed the large party of the members and their guests who attended the meeting with the Verein deutscher Ingenieure. While abroad Mr. Swasey will extend the invitation of the engineering profession of America to the engineering societies of the world to attend the Engineering Congress in San Francisco in 1915, particularly the Verein deutscher Ingenieure, the Société des Ingénieurs Civils de France, and the Institution of Mechanical Engineers of London. Mr. Swasey will return about July 1.

On May 13 the President and Secretary attended the last meeting of the season of the membership in the vicinity of Chicago. Each of the four meetings held has been in connection with an informal dinner and has proved very successful, affording an opportunity for the development of acquaintanceship as well as to hear an address of technical interest. The attendance has averaged over 200. The Secretary spoke of the opportunities which membership in the Society offered for rendering service to the profession, and said that the real benefits from membership in any organization are in proportion to what the member puts into it, not what he gets out of it.

The Secretary attended the rally of the Engineers Society of the State of Pennsylvania in Harrisburg on May 15, but the President was unable to be present. The invited guests included also P. M. Lincoln, president-elect of the American Institute of Electrical Engineers, and Chas. Enzian, vice-president of the Engineering Society of Northeastern Pennsylvania, as well as a member of the American Institute of Mining Engineers and of the American Society of Civil Engineers. Remarks were also made by several of the past-presidents of the Engineers Society of the State of Pennsylvania. The topic of the evening was the opportunities for coöperation between the engineering societies of the State of Pennsylvania, and between state and national societies, and an address was made by Dr. John Price Jackson, president of the entertaining organization.

Although unable to attend the meeting of the Milwaukee members on May 13, the Secretary held a telephone conversation with the Secretary of the Milwaukee Section and was pleased to hear of the success of the meetings.

The Engineers Club of Dayton, Ohio opened their new club house with a housewarming on May 14, but both the President and Secretary found it impossible to be present. The movement for organization in that city, instituted about a year ago, has met with enthusiastic coöperation, and the club is to be congratulated on its initial meeting.

CALVIN W. RICE, *Secretary.*

ENGINEERING CONGRESS IN 1915

A committee on reception to the foreign engineers who have been invited to visit the Engineering Congress in San Francisco in 1915, has been appointed as follows, and includes representatives of the five national engineering societies: H. H. Barnes, Jr., Alex. C. Humphreys, Charles Warren Hunt, Geo. F. Kunz. W. M. McFarland, E. D. Meier, E. E. Olcott, W. L. Saunders, Geo. F. Sever, and Stevenson Taylor.

COUNCIL NOTES

At the meeting of the Council on May 8 it was voted as a mark of the Council's respect and appreciation to leave unfilled until the next election the office of Manager, made vacant by the death of Alfred Noble. Wm. H. Wiley, Jesse M. Smith and F. R. Hutton were appointed a committee to prepare suitable resolutions.

The Committee on Standardization of Catalogue Sizes presented its revised report and was discharged with thanks. CALVIN W. RICE, *Secretary.*

APPLICATIONS FOR MEMBERSHIP

Members are requested to scrutinize with the utmost care the following list of candidates who have filed applications for membership in the Society. These are sub-divided according to the grades for which their age would qualify them and not with regard to professional qualifications, i.e., the age of those under the first heading would place them under either Member, Associate or Associate-Member, those in the next class under Associate-Member or Junior, while those in the third class are qualified for Junior grade only. The membership Committee, and in turn the Council, urge the members to assume their share of the responsibility of receiving these candidates into the membership by advising the Secretary promptly of anyone whose eligibility for membership is in any way questioned. Members will be furnished with complete records of any candidate thus questioned. All correspondence in regard to such matters is strictly confidential and is solely for the good of the Society, which it is the duty of every member to promote. These candidates will be balloted upon by the Council unless objection is received before July 10, 1914.

NEW APPLICATIONS

FOR CONSIDERATION AS MEMBER, ASSOCIATE OR ASSOCIATE-MEMBER

AYER, LUTHER S., Factory Mgr., International Motor Co., Plainfield, N. J.

BEHR, FRANCIS J., Government Representative, Hammond Radio Research Laboratory, Gloucester, Mass.

BILTON, CLARENCE E., Pres. and Treas., The Standard Mfg. Co., Bridgeport, Conn.

BURR, FRANK A., District Representative and Mech. Engr., Spray Engrg. Co., Chicago, Ill.

CAMPION, NORMAN G., Mill Supt., Calamba Sugar Estate, Canlubang, P. I.

CHAMBERS, NORMAN C., Representative Engr., Foreign Dept., Niles-Bement Pond Co., New York.

COLE, ROBERT C., Elec. Engr., Johns-Platt Co., Hartford, Conn.

CROSS, WALLACE J., Asst. Ch. Engr., Lake Superior Corp., Ltd., Sault Ste. Marie, Canada

DOUD, WILLARD, Mech. and Elec. Engr., Chicago & Western Indiana R. R. Co., Chicago, Ill.

DRAKE, CHARLES F., Babcock & Wilcox Co., Chicago, Ill.

DUNCAN, JOHN C., Prof. of Business Administration, University of Cincinnati, Cincinnati, Ohio.

FEYBUSCH, MARTIN, V.-P. and Treas., Jagenburg Mch. Co., Inc., New York

FLETCHER, FRED, District Sales Engr., Corrugated Bar Co., Buffalo, N. Y.

FULLERTON, WM. J., Supt., Helderberg Cement Co., Howes Cave, N. Y.

GIBBS, HAROLD E., Erecting and Testing Engr., Snow Steam Pump Wks., and Holly Mfg. Co., Buffalo, N. Y.

GLEASON, KATE, Secy., Gleason Works, Rochester, N. Y.

GORDON, WM. J., Mech. Supt., International Milling Co., New Prague, Minn.

GOULD, WM. S., Pres., Fuel Engrg. Co. of New York, New York

HAMMERS, MORGAN J., V.-P. and Engr., Abbott Motor Car Co., Detroit, Mich.

HOLMES, WINFIELD E., Engr., Samuel M. Green Co., Springfield, Mass.

HOWARD, DAVID C., Pres., DeLaney Forge & Iron Co., Buffalo, N. Y.

INGRAHAM, CARL L., Head Engr., Denver City Tramway Co., Denver, Colo.

KENDALL, HENRY P., Treas. and Genl. Mgr., The Plimpton Press., Norwood, Mass., and Pres., Lewis Mfg. Co., Walpole, Mass.

KEETH, GROVER, Asst. to Mech. Engr., Public Service Co. of Northern Ill., Chicago, Ill.

KING, ARTHUR D., Asst., Engrg. Dept., Standard Plunger Elevator Co., Worcester, Mass.

LAGE, GEORGE, Pres., Cia Nacional de Navegacao Costeira, Rio de Janeiro, Brazil

LANGELIER, ANTOINE J., Pres. and Designing Engr., Langelier Mfg. Co., Providence, R. I.

LOSEY, JOHN B., Supt., Amphion Piano Player Co., Syracuse, N. Y.

MAHER, EUGENE E., Pres., Maher & Byrne Co., Chicago, Ill.

MAY, OSCAR J., Lubricating Expert, The Texas Co., Chicago, Ill.

MORGAN, HENRY, Mech. Draftsman, Lehigh Coal & Navigation Co., Lansford, Pa.

NELSON, ALFRED C., Mech. Engr., with Arthur G. McKee, Cleveland, Ohio

PABODIE, ROBERT J., Wks. Mgr., The Griscom Russell Co., Massillon, Ohio.

PATTISON, HUGH, Elec. Engr., Com. of Investigation on Smoke Abatement, Chicago, Ill.

RICHARDSON, MAURICE F., Operating Mgr., The Arlington Co., Arlington, N. J.

ROESTI, PAUL G., Designer, Sulzer Brothers, Winterthur, Switzerland.

SEAVER, KENNETH, Ch. Engr. and Asst. Genl. Sales Mgr., Harbison-Walker Refractories Co., Pittsburgh, Pa.

SIDNEY, PHILIP, Singer Mfg. Co., 149 Broadway, New York

STEINMETZ, JOSEPH A., Member of Firm, Janney, Steinmetz & Co., Philadelphia, Pa.

STEVENSON, BARTON, Sales Mgr., Cleveland District, Westinghouse Mch. Co., Cleveland, Ohio.

THOMAS, GEORGE B., Mech. Engr. and Designer, The Bryant Elec. Co., and The Perkins Elec. Switch Mfg. Co., Bridgeport, Conn.

THOMAS, FIELDER W., Efficiency Engr., Plant of The Globe-Wernicke Co., Norwood, Ohio

WADSWORTH, ARTHUR V., Supt., Buckeye Traction Ditcher Co., Findlay, Ohio.

WENDLAND, CHARLES F., Pres., Mgr. & Cons. Engr., C. F. Wendland Engrg. & Constr. Co., New York.

WILLIAMSON, CHARLES S., Western Mgr., Mead-Morrison Mfg. Co., Chicago, Ill.

WILDE, ROBERT, Consulting Gear Engr., with Warner Gear Co., Muncie, Ind.